

Task Name	Group Member	Finish by Date/Due	Sep-15			Oct-15			Nov-15			Dec-15			Jan-16			Feb-16			Mar-16			Apr-16										
			1	8	15	22	29	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	2	9	16	23	1	8	15	22	29	5
<b>Individual Behavior</b>																																		
Research Kilobot Sensors	Jared	September 28, 2015	[Blue bar from Sep 15 to Sep 28]																															
Research Kilobot Communication Protocol	Jared	October 12, 2015	[Blue bar from Sep 15 to Oct 12]																															
Research Q-bot Image Processing	Ryan/Greg	October 5, 2015	[Blue bar from Sep 15 to Oct 5]																															
Research Q-bot Sensors	Ryan/Greg	September 28, 2015	[Blue bar from Sep 15 to Sep 28]																															
Research Q-bot Communication Protocol	Ryan/Greg	October 19, 2015	[Blue bar from Sep 15 to Oct 19]																															
Research E-puck Sensors	Brittany	October 26, 2015	[Blue bar from Sep 15 to Oct 26]																															
Research E-puck Communication Protocol	Brittany		[Blue bar from Sep 15 to Oct 26, then red bar from Nov 3 to Nov 10]																															
<b>Individual Communication</b>																																		
Research/Test Kilobot - Kilobot	Jared	October 19, 2015	[Blue bar from Sep 15 to Oct 19]																															
Research/Test E-puck - E-puck	Brittany	December 14, 2015	[Red bar from Nov 17 to Dec 14]																															
Research/Test Qbot - Qbot	Ryan/Greg	November 2, 2015	[Blue bar from Sep 15 to Nov 2]																															
<b>Integrated Communication</b>																																		
Test Kilobot - E-puck	Jared/Brittany	December 14, 2015	[Red bar from Nov 17 to Dec 14]																															
Test Kilobot - Qbot	Jared/Ryan/Greg	November 16, 2015	[Red bar from Oct 13 to Nov 16]																															
Test E-puck - Qbot	Brittany/Ryan/Greg	December 14, 2015	[Red bar from Nov 17 to Dec 14]																															
<b>Algorithm Design</b>																																		
Design Linear Based Model	All	December 14, 2015	[Red bar from Nov 17 to Dec 14]																															
<b>Integrated Behavior</b>																																		
<i>Formation Control Behavior</i>																																		
Localization	All	January 25, 2016	[Red bar from Nov 17 to Jan 25, 2016]																															
Point Convergence	All	January 25, 2016	[Red bar from Nov 17 to Jan 25, 2016]																															
Leader Follower	All	January 25, 2016	[Red bar from Nov 17 to Jan 25, 2016]																															
<i>Flocking Behavior</i>																																		
Neighbor Repulsion	All	February 1, 2016	[Red bar from Nov 17 to Feb 1, 2016]																															
Endpoint Attraction	All	February 1, 2016	[Red bar from Nov 17 to Feb 1, 2016]																															
Heading	All	February 1, 2016	[Red bar from Nov 17 to Feb 1, 2016]																															
<b>Testing</b>																																		
Software Implementation	All	March 7, 2016	[Blue bar from Sep 15 to Mar 7, 2016]																															
Hardware Implementation	All	March 7, 2016	[Blue bar from Sep 15 to Mar 7, 2016]																															
<b>Deliverables</b>																																		
Project Proposal - Oral Presentation	All	October 1, 2015	[Blue bar from Sep 15 to Oct 1, 2015]																															
Project Proposal - Document	All	October 15, 2015	[Blue bar from Sep 15 to Oct 15, 2015]																															
Webpage Release	All	October 28, 2015	[Blue bar from Sep 15 to Oct 28, 2015]																															
Fall Progress Presentation	All	November 19, 2015	[Blue bar from Sep 15 to Nov 19, 2015]																															
Fall Performance Evaluation	All	November 19, 2015	[Blue bar from Sep 15 to Nov 19, 2015]																															
Fall Performance Review	All	December 3, 2015	[Red bar from Oct 13 to Dec 3, 2015]																															
Spring Progress Presentation	All	February 18, 2016	[Red bar from Jan 11 to Feb 18, 2016]																															
Student Expo Abstract	All	March 18, 2016	[Red bar from Feb 11 to Mar 18, 2016]																															
Project Demonstration	All	March 24, 2016	[Red bar from Feb 11 to Mar 24, 2016]																															
Final Presentation	All	April 7, 2016	[Red bar from Mar 11 to Apr 7, 2016]																															
Student Expo Poster Printing Deadline	All	April 11, 2016	[Red bar from Mar 11 to Apr 11, 2016]																															
Student Expo Poster Setup	All	April 12, 2016	[Red bar from Mar 11 to Apr 12, 2016]																															
Student Expo	All	April 14, 2016	[Red bar from Mar 11 to Apr 14, 2016]																															
Final Report (Draft)	All	April 14, 2016	[Red bar from Feb 11 to Apr 14, 2016]																															
Final Report	All	April 28, 2016	[Red bar from Feb 11 to Apr 28, 2016]																															
Final Web Page	All	April 28, 2016	[Red bar from Feb 11 to Apr 28, 2016]																															
Advisory Board Poster Printing Deadline	All	April 28, 2016	[Red bar from Mar 11 to Apr 28, 2016]																															
Advisory Board Poster Presentation	All	April 29, 2016	[Red bar from Mar 11 to Apr 29, 2016]																															

Complete In progress

For the last week, Jared has been working on three things, receiving messages, color consensus, and localization. For message receiving Jared has completed the circuitry required and was able to interface it with an Atmega128 board. However, during testing the Infrared receiver's leads snapped off, hindering any testing until a replacement can be obtained. The color consensus is a simple yet interesting idea. Each kilobot starts with a random color and transmits that color value to its neighbors. The kilobots listen for messages and tally up how many messages of each color it receives. Then the Kilobot changes its color to the most prevalent color and updates what color it is sending. Localization will be tested on the Kilobots on Thursday November 19<sup>th</sup>. Currently Jared is behind on the communications portion of the project. Brittany has completed the task determining how the distance measurement sensors work. She has created a program, where the E-puck can follow and object using the 0<sup>th</sup> distance measurement sensor. She also is continuing work on using the IR sensor to communicate with the Kilobots. Over the last week, Greg and Ryan calculated how to localize the heading angle  $\theta$  and pair that with the  $(x,y)$  coordinates. Otherwise, the two coordinate systems will not match up unless the Qbots initially face the same direction. Without a common  $\theta$  reference, the localized coordinate system is effectively worthless. Ryan and Greg also programmed three Qbots to converge on a single consensus point (with all three starting with the same heading or with a hard-coded angle offset). The next week will be continuing work on the algorithm designs as well as communication between each of the robotic platforms.